IN THE CLAIMS:

Claims 8, 10, 12, 14, 16, and 18 have been amended herein. Claims 1-7, 9, 11, 13, 15, and 17 have been canceled. Claims 19-24 have been added. A complete listing of the claims with appropriate claim identifiers is set forth below.

Listing of Claims:

1-7. (Canceled)

8. (Currently amended) The method according to ~~claim 7,~~ claim 19, wherein the diazotization/chloro-dediazoniation reaction is performed at or less than a temperature of 0° C.

9. (Canceled)

10. (Currently amended) The method according to ~~claim 9,~~ claim 20, wherein replacing the 2-amino group of the product of step (a) with a 2-chloro group is performed at or less than a temperature of 0° C.

11. (Canceled)

12. (Currently amended) The method according to ~~claim 11,~~ claim 21, wherein reacting the product of step (a) with a halide source and a nitrite source in a solvent compatible with the halide source to replace the 2-amino group with a 2-chloro group is performed at or less than a temperature of 0° C.

13. (Canceled)

14. (Currently amended) The method according to ~~claim 13,~~ claim 22, wherein reacting the product of step (a) with a halide source and a nitrite source in a

solvent compatible with the halide source to replace the 2-amino group with a 2-chloro group is performed at or less than a temperature of 0° C.

15. (Canceled)

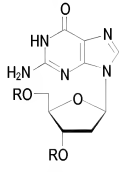
16. (Currently amended) The method according to ~~claim 15,~~ claim 23, wherein replacing the 2-amino group with a 2-chloro group by diazotization/chloro-dediazoniation of the 2-amino group is performed at or less than a temperature of 0° C.

17. (Canceled)

18. (Currently amended) The method according to ~~claim 17,~~ claim 24, wherein reacting the product of step (a) with a halide and an organic nitrite in a solvent compatible with the halide to replace the 2-amino group with a 2-chloro group by diazotization/chloro-dediazoniation of the 2-amino group is performed at or less than a temperature of 0° C.

19. (New) A method for producing 2-chloro-2'-deoxyadenosine comprising the steps of:

(a) converting the 6-oxo group of a compound having the formula



wherein R is a protecting group, into a 6-(substituted oxy) group having sufficient reactivity in an S_NAr displacement reaction;

(b) replacing the 2-amino group with a 2-chloro group by a diazotization/chloro-dediazoniation reaction;

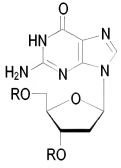
(c) replacing the 6-(substituted oxy) leaving group with a 6-amino group; and

(d) removing the R protecting groups, to produce 2-chloro-2'-deoxyadenosine;

wherein replacing the 2-amino group with a 2-chloro group by a diazotization/chloro-dediazoniation reaction is performed using acetyl chloride and benzyltriethylammonium nitrite.

20. (New) A method for producing 2-chloro-2'-deoxyadenosine comprising the steps of:

(a) converting the 6-oxo group of a compound having the formula



wherein R is a protecting group, into a 6-(substituted oxy) leaving group selected from the group consisting of (alkyl or any substituted alkyl or cycloalkyl) sulfonyl, phosphoryl or phosphonyl groups, (aryl or any substituted aryl)sulfonyl, phosphoryl or phosphonyl groups;

(b) replacing the 2-amino group of the product of step (a) with a 2-chloro group;

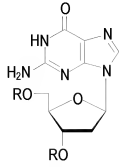
(c) replacing the 6-(substituted oxy) leaving group of the product of step (b) with a 6-amino group; and

(d) removing the R protecting groups, to produce 2-chloro-2'-deoxyadenosine;

wherein replacing the 2-amino group of the product of step (a) with a 2-chloro group is performed using acetyl chloride and benzyltriethylammonium nitrite.

21. (New) A method for producing 2-chloro-2'-deoxyadenosine comprising the steps of:

(a) reacting the 6-oxo group of a compound having the formula



wherein R is a protecting group, with reagents selected from the group consisting of (alkyl or any substituted alkyl or cycloalkyl)sulfonyl, phosphoryl or phosphonyl reagents and (aryl or any substituted aryl)sulfonyl, phosphoryl or phosphonyl reagents to produce a 6-*O*-(alkyl, substituted alkyl, cycloalkyl, aryl, or substituted aryl)sulfonyl, phosphoryl or phosphonyl group that is capable of hindering nucleophilic attack at the sulphonyl sulfur, phosphoryl or phosphonyl phosphorous and promoting nucleophilic attack at C6 upon subsequent ammonolysis;

(b) reacting the product of step (a) with a halide source and a nitrite source in a solvent compatible with the halide source to replace the 2-amino group with a 2-chloro group;

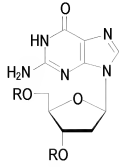
(c) reacting the product of step (b) with a nitrogen source in a solvent compatible with the nitrogen source to replace the 6-(substituted oxy) leaving group with a 6-amino group; and

(d) reacting the product of step (b) or step (c) with a nitrogen source in a solvent compatible with the nitrogen source to remove the R protecting groups, to produce 2-chloro-2'-deoxyadenosine;

wherein reacting the product of step (a) with a halide source and a nitrite source in a solvent compatible with the halide source to replace the 2-amino group with a 2-chloro group is performed using acetyl chloride and benzyltriethylammonium nitrite.

22. (New) A method for producing 2-chloro-2'-deoxyadenosine comprising the steps of:

(a) reacting the 6-oxo group of a compound having the formula



wherein R is a protecting group, with a halogen compound, to produce a 6-halo leaving group;

(b) reacting the product of step (a) with a halide source and a nitrite source in a solvent compatible with the halide source to replace the 2-amino group with a 2-chloro group;

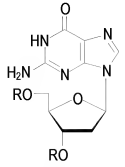
(c) reacting the product of step (b) with a nitrogen source in a solvent compatible with the nitrogen source to replace the 6-halo leaving group with a 6-amino group by selective ammonolysis of the 6-leaving group; and

(d) reacting the product of steps (b) or (c) with a nitrogen source in a solvent compatible with the nitrogen source to remove the R protecting groups, to produce 2-chloro-2'-deoxyadenosine;

wherein reacting the product of step (a) with a halide source and a nitrite source in a solvent compatible with the halide source to replace the 2-amino group with a 2-chloro group is performed using acetyl chloride and benzyltriethylammonium nitrite.

23. (New) A method for producing 2-chloro-2'-deoxyadenosine comprising the steps of:

(a) converting the 6-oxo group of a compound having the formula



wherein R is a protecting group selected from the group consisting of acetyl, benzoyl, into a 6-leaving group having lesser reactivity than that of the 2-amino group in a diazotization/chloro-dediazoniation displacement reaction;

(b) replacing the 2-amino group with a 2-chloro group by diazotization/chloro-dediazoniation of the 2-amino group;

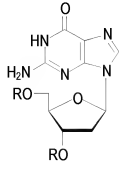
(c) replacing the 6-leaving group with a 6-amino group by selective ammonolysis of the 6-leaving group; and

(d) removing the R protecting groups by deacylation, to produce 2-chloro-2'-deoxyadenosine;

wherein replacing the 2-amino group with a 2-chloro group by diazotization/chloro-dediazoniation of the 2-amino group is performed using acetyl chloride and benzyltriethylammonium nitrite.

24. (New) A method for producing 2-chloro-2'-deoxyadenosine comprising the steps of:

(a) reacting the 6-oxo group of a compound having the formula



wherein R is a protecting group selected from the group consisting of acyl and silyl, with an (alkyl or any substituted alky or cycloalkyl) sulfonyl or phosphoryl reagent or (aryl or any substituted aryl) sulfonyl or phosphoryl reagent to convert the 6-oxo group to a 6-*O*-(alkyl, cycloalkyl, or aryl) sulfonyl or phosphoryl group;

(b) reacting the product of step (a) with a halide and an organic nitrite in a solvent compatible with the halide to replace the 2-amino group with a 2-chloro group by diazotization/chloro-dediazoniation of the 2-amino group;

(c) reacting the product of step (b) with ammonia in a compatible solvent, or with a nitrogen source capable of being converted to an amino group in a solvent compatible with the nitrogen source, to replace the 6-leaving group with a 6-amino group; and

(d) reacting the product of step (c) with a basic reagent in a compatible solvent to remove the R protecting groups by deacylation, to produce 2-chloro-2'-deoxyadenosine;

wherein reacting the product of step (a) with a halide and an organic nitrite in a solvent compatible with the halide to replace the 2-amino group with a 2-chloro group by diazotization/chloro-dediazoniation of the 2-amino group is performed using acetyl chloride and benzyltriethylammonium nitrite.